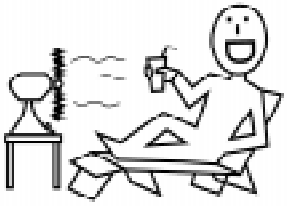

S'COOL BREEZE

Student's Cloud Observations On-Line

Volume 2 , Issue 5 March 2002

From CERES Scientist to S'COOL Students

CERES PAIR

Dear Students,

I would like to take this opportunity to thank all the participants in the S'COOL project. Historically weather observers take cloud observations once every few hours, but clouds change rapidly in the sky, and S'COOL provides the unique ability to obtain cloud observations matched in space and time with the satellite view from space. In particular, we often wonder whether small amounts of cloud or very thin cloud can have escaped the satellite automated algorithms. The S'COOL observations give us a good look at this challenge. We thank the students for their great efforts so far, and look forward to many more observations from many parts of the world. Different parts of the U.S. and the world experience different types of cloud and atmospheric states. For global climate studies we want to check them all and eliminate surprises later! Clouds are one of the most fascinating but difficult things to observe from either the ground or space.

Finally, the scientists on the CERES project have found S'COOL not only technically rewarding, but also energizing. Seeing the excitement in the S'COOL kids and teachers is in itself a great gift. I must admit that when the NASA administrator challenged the scientists in NASA to reach out to the students and teachers directly, I was skeptical that this would work. And when Lin Chambers first walked into my office with the idea for S'COOL I was still skeptical. But 1000 schools later you all have made not only me, but the entire team of CERES scientists true believers! S'COOL has been a great experience that has not only benefited the students as it was originally intended, but also the CERES science, and the CERES scientists. I want to congratulate you all and I am looking forward to seeing more schools, more countries, and more S'COOL observations. Keep up the great work.

Cheers,

Dr. Bruce Wielicki,
CERES Interdisciplinary Science
Principal Investigator

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Saharan Sands Dust the Canary Islands

On the Island of Tenerife

The Salesian School, San Isidro, is located in the town of Orotava, on the Island of Tenerife (Canary Islands). Tenerife is the largest of the Canary Islands (located along the NW coast of Africa) and the volcano Teide is the highest point on the islands with an elevation of 3718 m above sea level. On the other hand, the town of Orotava, located in the Valley of the same name, has a splendid and beautiful green countryside. Our school has been participating in NASA's S'COOL Project for four years and we continue to observe with much enthusiasm. Our students have enjoyed being part of the S'COOL Project and also enjoy the opportunity to be actively involved in this ambitious project that brings their scientific interests to life. Now, we can't always enjoy the splendid Canary Island scenery depicted in this photograph. Sometimes our islands are invaded by dust storms from the neighboring Sahara desert. In the Canary Islands we called this phenomenon "Southern weather" because it is the opposite of the predominant weather of our islands: the humid flow of the trade winds from the Northeast.

We experience these conditions several times a year but they are most noteworthy during autumn and the summer due to their severity. These uncomfortable dust invasions, also called 'calima,' can be warm or cool. The warm storms appear during the summer while the cool ones appear during the autumn and continue into winter sometimes raising the seasonal

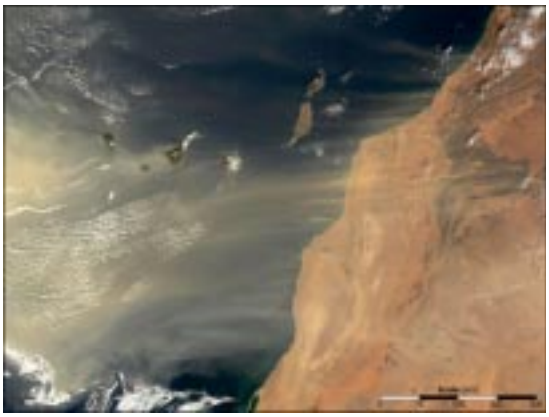
(Continued on page 2)

(Saharan Sands... Continued from page 1)

temperature by 30ºC. There is a clear difference between these two types of storms. During a cool storm, there is a powerful high over Western Europe that reaches the northern coast of Africa and sends less warm air to the Canary Islands. During a warm storm, a thermal low develops over the Sahara Desert due to surface heating, and a high pressure remains at higher altitudes.

The effects of these sand storms are more noticeable above 600m elevation on the more mountainous islands. The most important characteristics of this type of dust invasion are:

1. The temperatures can easily reach 40ºC or more, for example, 48ºC was recorded on the island of Lanzarote in 1952.
2. The relative humidity can drop to insignificant levels due to the extremely dry air masses, for example, 7% in Izaña (2300 m) on the island of Tenerife.
3. These suspended dust storms can reduce visibility considerably. In addition, people with respiratory problems experience severe attacks and are often hospitalized.
4. The usual wind direction is from the East, Southeast or the South. Its speed can fluctuate from strong winds (in winter if a depression to the SW of the Canary Islands exists that intensifies the flow E-SE) to actual calm.
5. They can last from three to fifteen consecutive days (in August of 1949 one extended up to twenty-five consecutive days).



The condition that is depicted in this Terra satellite image from the 6th of January 2002, is a cool storm. The previous day there was stormy weather due to a depression from the SW of the Canary Islands, but on this day the winds began to blow strongly from the SE and gave rise to the Saharan dust storms clearly depicted in this image.

Submitted by Jose Luis Hernandez Perez, Salesiano-San Isidro School, Tenerife, Canary Islands, Spain

Dust Storm Hits Canary Islands
http://earthobservatory.nasa.gov/NaturalHazards/

"A thick pall of Saharan sand and dust engulfed the Canary Islands on Jan. 6, 2002, in what has become one of the worst sand storms ever recorded there."

S'COOL'S FULL SPECTRUM:FROM FIRST GRADERS TO PILOTS (?)

S'COOL targets 3-9th grade students. Can this project be used effectively with younger grades?
Let's ask Donna Persinger, a first grade teacher at Sissonville Elementary School in West Virginia.

HOW WERE YOU ABLE TO IMPLEMENT S'COOL OBSERVATIONS IN YOUR 1ST GRADE CLASS?
Last year when I started I wasn't sure how much my first graders could understand the cloud observations. I was very fortunate to teach with a fifth grade teacher who also has a love for science just as I do and together we found a fifth grade student to work with my first graders in making the cloud observations. It works out great and my students began to pick up more and more information each time they did a cloud observation with Joshua. After training him, he would assist the students with the observations during the overpass times each day. Having an older student as a mentor and class helper worked out perfectly last year.

AND HOW WOULD YOU ACCOMPLISH THIS WITHOUT THE ASSISTANCE OF AN OLDER STUDENT?
This year I found myself in this very situation. Due to schedule conflicts, I was not able to get an upper elementary student to help us so in the very beginning of the year I downloaded the chart of clouds for my students and we talked about them. They had a chart in school and they kept a chart at home. In the beginning we did the cloud observations as a whole group and they answered all the questions orally as I marked it down on the form. This past January we did our weather unit and we studied the cloud types in detail. We used different kinds of materials for them to "see" the related concepts.

WHAT ACTIVITIES HAVE YOU USED TO TEACH YOUR STUDENTS ABOUT CLOUDS AND COLLECTING SCIENCE DATA?
Activities that we have been doing are paintings of the different clouds using styrofoam cotton balls and pillow stuffing. We also went outside and drew the clouds that we saw that day using chalk and crayons. We have been keeping a weather journal as well. My students now help complete some of the form by themselves. With practice I'm hoping that they will do more and more and begin typing the report on the computer to submit their data to NASA. I was able to also purchase a small weather station to collect data too.

(S'COOL's Full Spectrum... Continued from page 2)

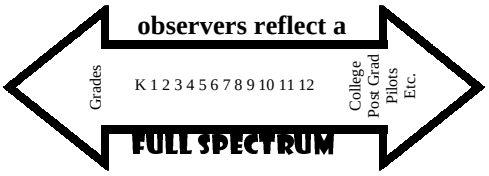
STUDENTS' RESPONSES:

This is cool!-WOW!-Is it my turn again to check the clouds?- Mrs. Persinger, what time is the cloud observation today?-Is it science time yet?-Whenever we go outside to play or to the buses, one or two students will say Mrs. Persinger there's a cumulus cloud or a cirrus cloud, or a stratus cloud or there is contrails from an airplane.

WHAT IS THE BEST PART ABOUT S'COOL?

The best part about S'COOL is the actual learning about the clouds and being able to identify them. Getting the students actively involved in science, along with integrating all subjects around one particular theme. When the students get excited about learning and want to learn more about what we are studying this makes me feel that I have opened their minds to more than everyday book learning, but to the thrills and excitement of hands-on activities and a desire for life-long learning.

S'COOL caters to life-long learners as our observers reflect a FULL SPECTRUM



A flight training school just registered to observe with S'COOL and we are eager to see how these pilots might provide unique cloud observations from another level.

Please use our messageboard to pose questions and begin further dialogue on related topics. Let's Connect! on the S'COOL Website.

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

S'COOL: WHY? FILES

Guest appearance- Lin Chambers

This "Must-See" episode's initial air date: Wed., April 10, 2002 11:00-12:00 EST

The Case of the Phenomenal Weather

Join the tree house detectives as they plan a trip to the Caribbean and encounter problems trying to predict the weather. While solving this case they will discover that weather is not predictable at all!

• See http://whyfiles.larc.nasa.gov •

for further broadcast or video copy information.

Dr. Chambers, We have a question about CLOUDS!

FREE S'COOL MATERIALS

(ready to print and use)

Go to http://asd-www.larc.nasa.gov/SCOOL/materials.html

What's NEW?

- **One Page Cloud Chart**
- **Weekly Observation Log**
- **Bookmarks and more!**

Teacher Corner

NEWS

AQUA WEBCASTS:
http://asd-www.larc.nasa.gov/SCOOL/aqualaunch.html
From Maunakea , Hawaii, 2,743m above sea level, Aqua pre-launch webcast focussing on Aqua contributions to Atmospheric Science. **CERES Co- Investigator and S'COOL Director, Lin Chambers, was part of this webcast.** (Works best in Internet Explorer 5)

Remember Day Light Saving Time. Spring Ahead on April 1 in most of the USA.

Observations were strong as we entered the new year. 684 observations were added to the database in January. Keep observing!

Sun-Earth Day on March 20, 2002. Measure the sun's elevation angle during that week and enter your sun angle data on-line.

http://asd-www.larc.nasa.gov/SCOOL/sun-earth.html

Teacher Resources:

NASA Earth Observatory Site
http://earthobservatory.nasa.gov/
Many S'COOL-Related articles found at http://asd-www.larc.nasa.gov/SCOOL/earthobs.html

Thank you for your continued participation!

Sun-Earth Day Sun Angle Activity

"We loved going out at lunchtime and see the sun move so much in really a short period of time."

James Martin
2nd Grade Class
Almaty, Kazakstan

NASA Langley Research Center
CERES S'COOL Project
Mail Stop 420
Hampton, VA 23681-2199

Upcoming Events

http://asd-www.larc.nasa.gov/SCOOL/visits.html

From Space to the Caribbean Teachers Conference, PR and Virgin Islands, March 8-13

National Association for Bilingual Education Conference, Philadelphia, PA, March 19-23

Satellite & Education Conference XV, Los Angeles, CA, March 25-27

NSTA National Convention, San Diego, CA, March 27-30

Summer S'COOL Workshop July 17-24, 2002

For more information contact us by:
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Douglas Stoddard, editor
Dr. Lin Chambers, French translator
Roberto Sepulveda, Spanish translator

Teacher Time

"This really has been an exciting study. My thoughts at the beginning were, there isn't enough time. That thought has completely been ruled out. I have the overpass schedule hanging by the door with the report forms. They write the time when they walk in, when the time comes, they slowly go out the door to observe. It does only take a few minutes. Everyone is really enjoying it."

Cindy Brown, Horace Mann School, Woodward, OK